

CLAIMS

What is claimed is:

1. A fan speed controller comprising:

a pulse width modulation generator for generating a pulse width modulation signal;

and

a drive stage circuit coupled to said pulse width modulation generator and for switch mode converting a supply voltage into a linear voltage for driving a fan, wherein a voltage level of said linear voltage is a function of said pulse width modulation signal.

2. The fan speed controller according to Claim 1, wherein an operating speed of said fan is a function of said voltage level of said linear voltage.

3. The fan speed controller according to Claim 1, further comprising a thermal monitor having an output coupled to an input of said pulse width modulation generator.

4. The fan speed controller according to Claim 1, further comprising a speed sensor having an input coupled to an output of said fan and an output coupled to an input of said pulse width modulation generator.

5. The fan speed controller according to Claim 1, wherein said drive stage circuit comprises:

a first transistor having a gate for receiving said pulse width modulation signal and a source coupled to a first potential;

a current shunting element having a first terminal coupled to a drain of said first transistor and a second terminal coupled to a second potential;

a capacitor having a first terminal coupled to said second terminal of said current shunting element; and

an inductor having a first terminal coupled to a second terminal of said capacitor and a second terminal coupled to said first terminal of said current shunting element and to said drain of said first transistor.

6. The fan speed controller according to Claim 5, wherein:

an operating frequency of said pulse width modulation generator is approximately within the range of 200-1,000 KHz;

said inductor is approximately within the range of 1-500 μ H; and

said capacitor has an ESR value of approximately within the range of 0.1-50 Ω .

7. The fan speed controller according to Claim 6, wherein a difference between said second potential and said first potential is approximately within the range of 5-50 Volts.

8. A fan speed controller comprising:

a pulse width modulation generator for generating a pulse width modulation signal;

and

a drive stage circuit comprising;

a first transistor having a gate for receiving said pulse width modulation signal and a source coupled to a first potential;

a current shunting element having a first terminal coupled to a drain of said first transistor and a second terminal coupled to a second potential;

a capacitor having a first terminal coupled to said second terminal of said current shunting element; and

an inductor having a first terminal coupled to a second terminal of said capacitor and a second terminal coupled to said first terminal of said current shunting element and to said drain of said first transistor.

9. The fan speed controller according to Claim 8, wherein said current shunting element comprises a diode having an anode coupled to said drain of said first transistor and to said second terminal of said inductor, and a cathode coupled to said second potential and to said first terminal of said capacitor.

10. The fan speed controller according to Claim 8, wherein said current shunting element comprises a second transistor having a gate for receiving a complement of said pulse width modulation signal, a source coupled to said drain of said first transistor and to said second terminal of said inductor, and a drain coupled to said second potential and to said first terminal of said capacitor.

11. The fan speed controller according to Claim 8, further comprising a thermal monitor having an output coupled to an input of said pulse width modulation generator.

12. The fan speed controller according to Claim 8, further comprising a fan coupled across said capacitor.

13. The fan speed controller according to Claim 12, further comprising a speed sensor having an input coupled to an output of said fan and an output coupled to an input of said pulse width modulation generator.

14. The fan speed controller according to Claim 8, wherein said pulse width modulation signal is generated as a function of a feedback signal.

15. The fan speed controller according to Claim 14, wherein said feedback signal is generated by a thermal monitor.

16. The fan speed controller according to Claim 14, wherein said feedback signal is generated by a speed sensor.

17. The fan speed controller according to Claim 8, wherein a linear voltage for driving a fan is generated across said capacitor.

18. The fan speed controller according to Claim 8, wherein an operating frequency of said pulse width modulation generator is approximately within the range of 200-1,000 KHz.

19. The fan speed controller according to Claim 18, wherein said inductor is approximately within the range of 1-500 μ H.

20. The fan speed controller according to Claim 19, wherein said capacitor is approximately within the range of 0.1-50 uF.

21. The fan speed controller according to Claim 19, wherein said capacitor has an ESR value of approximately within the range of 0.1-50 Ω .

22. The fan speed controller according to Claim 8, wherein a difference between said second potential and said first potential is approximately within the range of 5-50 Volts.

23. A fan speed control method comprising:
generating a pulse width modulated signal; and
switch mode converting a supply voltage into a linear voltage for driving a fan,
wherein a voltage level of said linear voltage is a function of said pulse width modulated signal.

24. The method according to Claim 23, wherein an operating speed of said fan is a function of said voltage level of said linear voltage.

25. The method according to Claim 24, wherein said generating comprises generating said pulse width modulation signal as a function of a temperature signal.

26. The method according to Claim 24, wherein said generating comprises generating said pulse width modulation signal as a function of a fan speed signal.